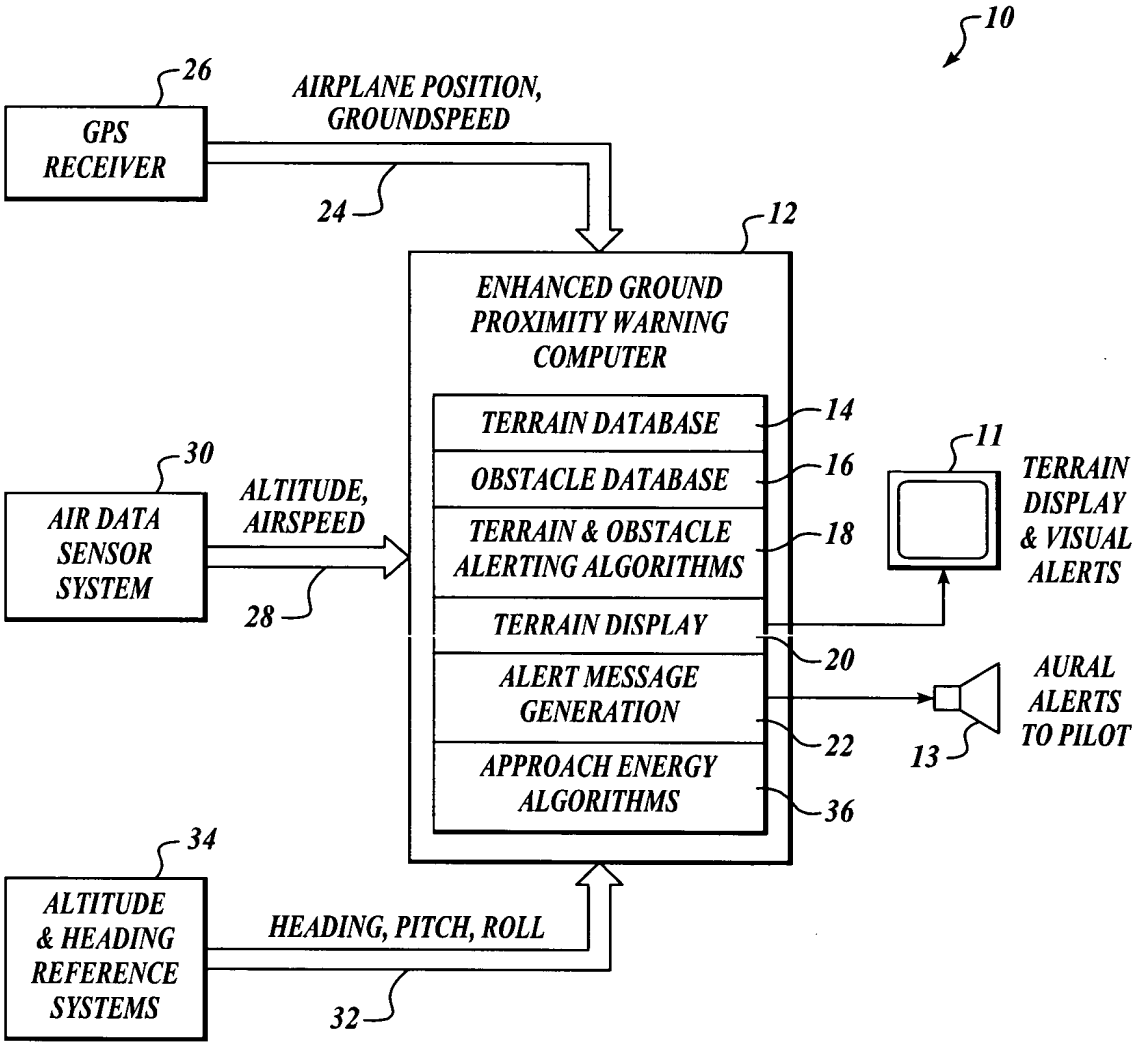
10
26
GPS RECEIVER
AIRPLANE POSITION, GROUNDSPEED
24
12
ENHANCED GROUND PROXIMITY WARNING COMPUTER
TERRAIN DATABASE
14
OBSTACLE DATABASE
16
TERRAIN & OBSTACLE ALERTING ALGORITHMS
18
TERRAIN DISPLAY
20
ALERT MESSAGE GENERATION
22
APPROACH ENERGY ALGORITHMS
36
30
AIR DATA SENSOR SYSTEM
ALTITUDE, AIRSPEED
28
11
TERRAIN DISPLAY & VISUAL ALERTS
AURAL ALERTS TO PILOT
13
34
ALTITUDE & HEADING REFERENCE SYSTEMS
HEADING, PITCH, ROLL
32

Fig. 1.

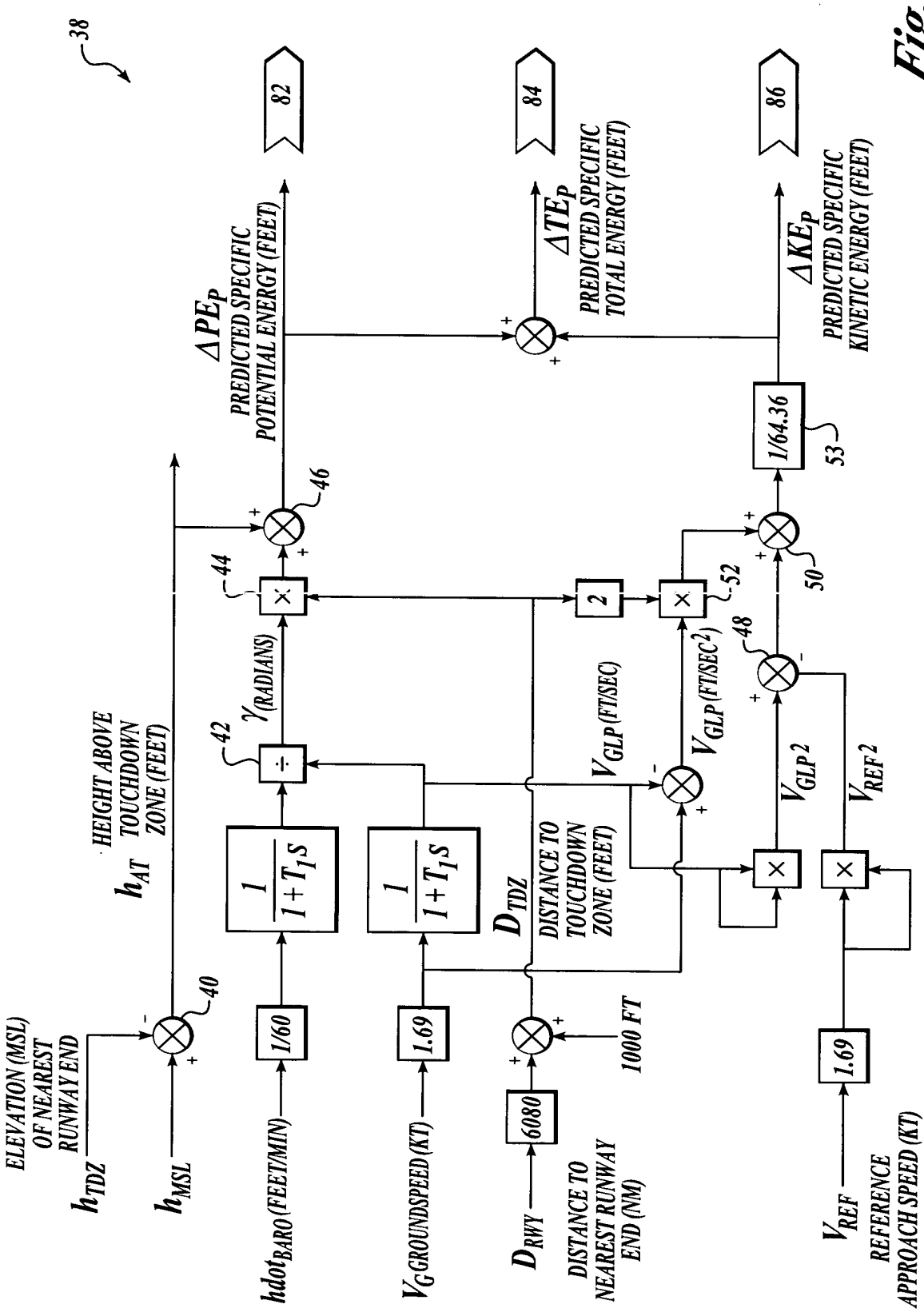
38
82
84
86
ΔPE_P PREDICTED SPECIFIC POTENTIAL ENERGY (FEET)
ΔTE_P PREDICTED SPECIFIC TOTAL ENERGY (FEET)
ΔKE_P PREDICTED SPECIFIC KINETIC ENERGY (FEET)
46
44
42
40
48
50
52
53
$\gamma_{(RADIANS)}$
h_{AT} HEIGHT ABOVE TOUCHDOWN ZONE (FEET)
D_{TDZ} DISTANCE TO TOUCHDOWN ZONE (FEET)
$V_{GLP(FT/SEC)}$
$V_{GLP(FT/SEC^2)}$
$V_{GLP}{}^2$
$V_{REF}{}^2$
2
1/64.36
$\frac{1}{1+T_1S}$
$\frac{1}{1+T_1S}$
1/60
1.69
6080
1.69
1000 FT
ELEVATION (MSL) OF NEAREST RUNWAY END
h_{TDZ}
h_{MSL}
$hdot_{BARO}$ (FEET/MIN)
V_G GROUNDSPEED (KT)
D_{RWY} DISTANCE TO NEAREST RUNWAY END (NM)
V_{REF} REFERENCE APPROACH SPEED (KT)

Fig. 2.

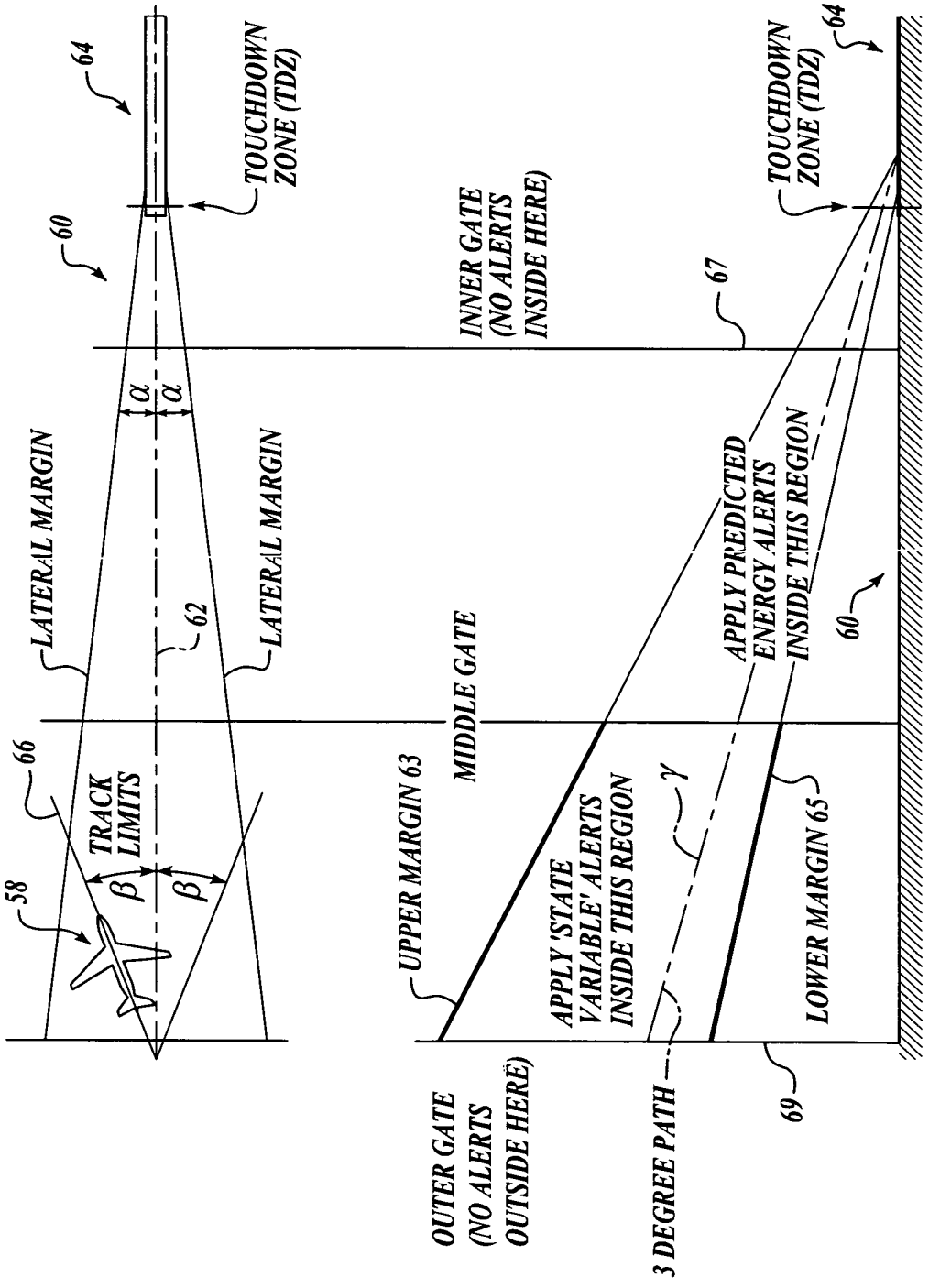
64
TOUCHDOWN ZONE (TDZ)
60
INNER GATE (NO ALERTS INSIDE HERE)
67
64
TOUCHDOWN ZONE (TDZ)
α
α
LATERAL MARGIN
62
LATERAL MARGIN
APPLY PREDICTED ENERGY ALERTS INSIDE THIS REGION
60
66
TRACK LIMITS
β
β
MIDDLE GATE
58
UPPER MARGIN 63
APPLY 'STATE VARIABLE' ALERTS INSIDE THIS REGION
γ
LOWER MARGIN 65
OUTER GATE (NO ALERTS OUTSIDE HERE)
3 DEGREE PATH
69

Fig. 3A.

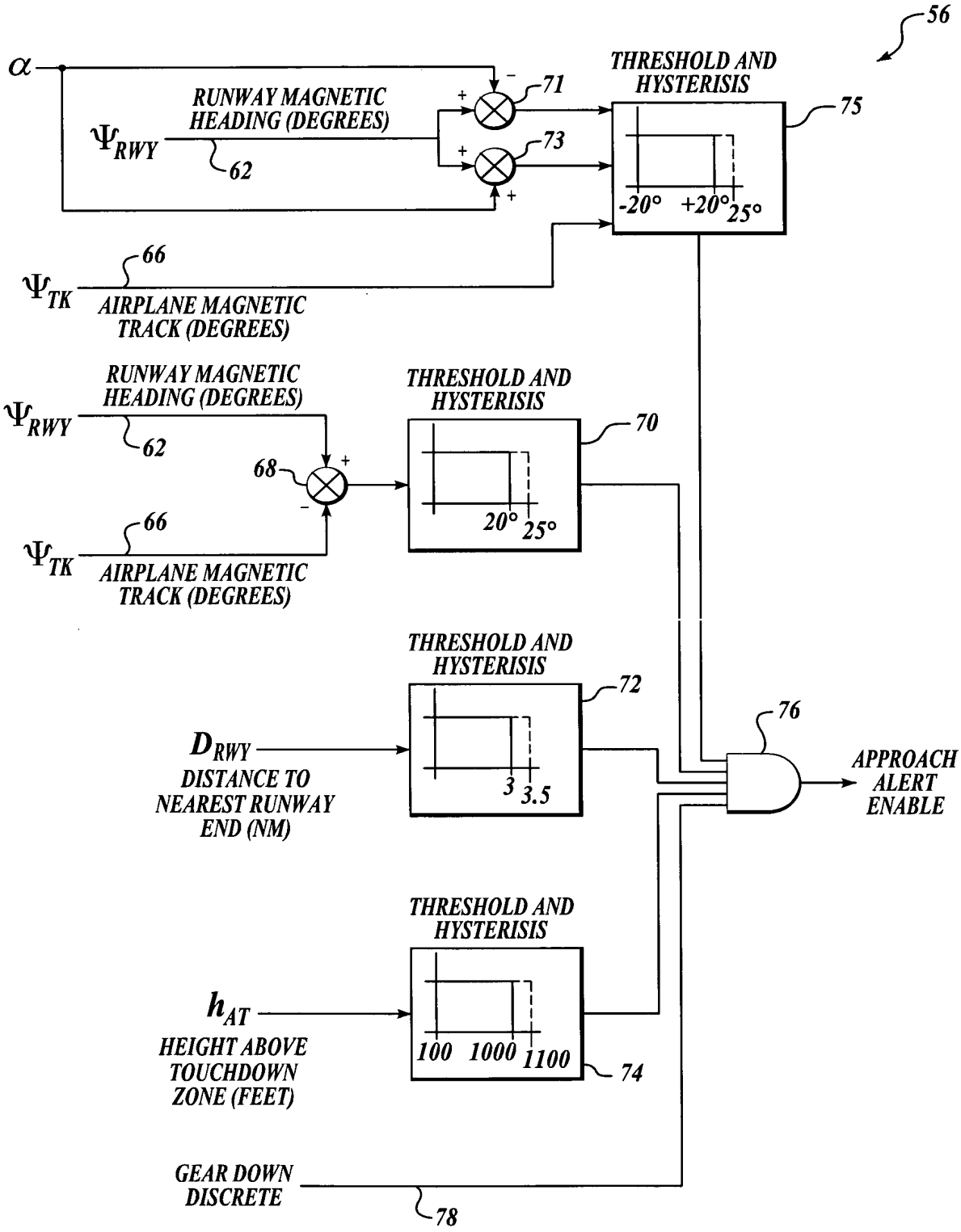
56
α
RUNWAY MAGNETIC HEADING (DEGREES)
Ψ RWY
62
71
73
THRESHOLD AND HYSTERISIS
75
-20° +20° 25°
66
Ψ TK
AIRPLANE MAGNETIC TRACK (DEGREES)
RUNWAY MAGNETIC HEADING (DEGREES)
Ψ RWY
62
68
THRESHOLD AND HYSTERISIS
70
20° 25°
66
Ψ TK
AIRPLANE MAGNETIC TRACK (DEGREES)
THRESHOLD AND HYSTERISIS
72
D RWY
DISTANCE TO NEAREST RUNWAY END (NM)
3 3.5
76
APPROACH ALERT ENABLE
THRESHOLD AND HYSTERISIS
h AT
HEIGHT ABOVE TOUCHDOWN ZONE (FEET)
100 1000 1100
74
GEAR DOWN DISCRETE
78

Fig. 3B.

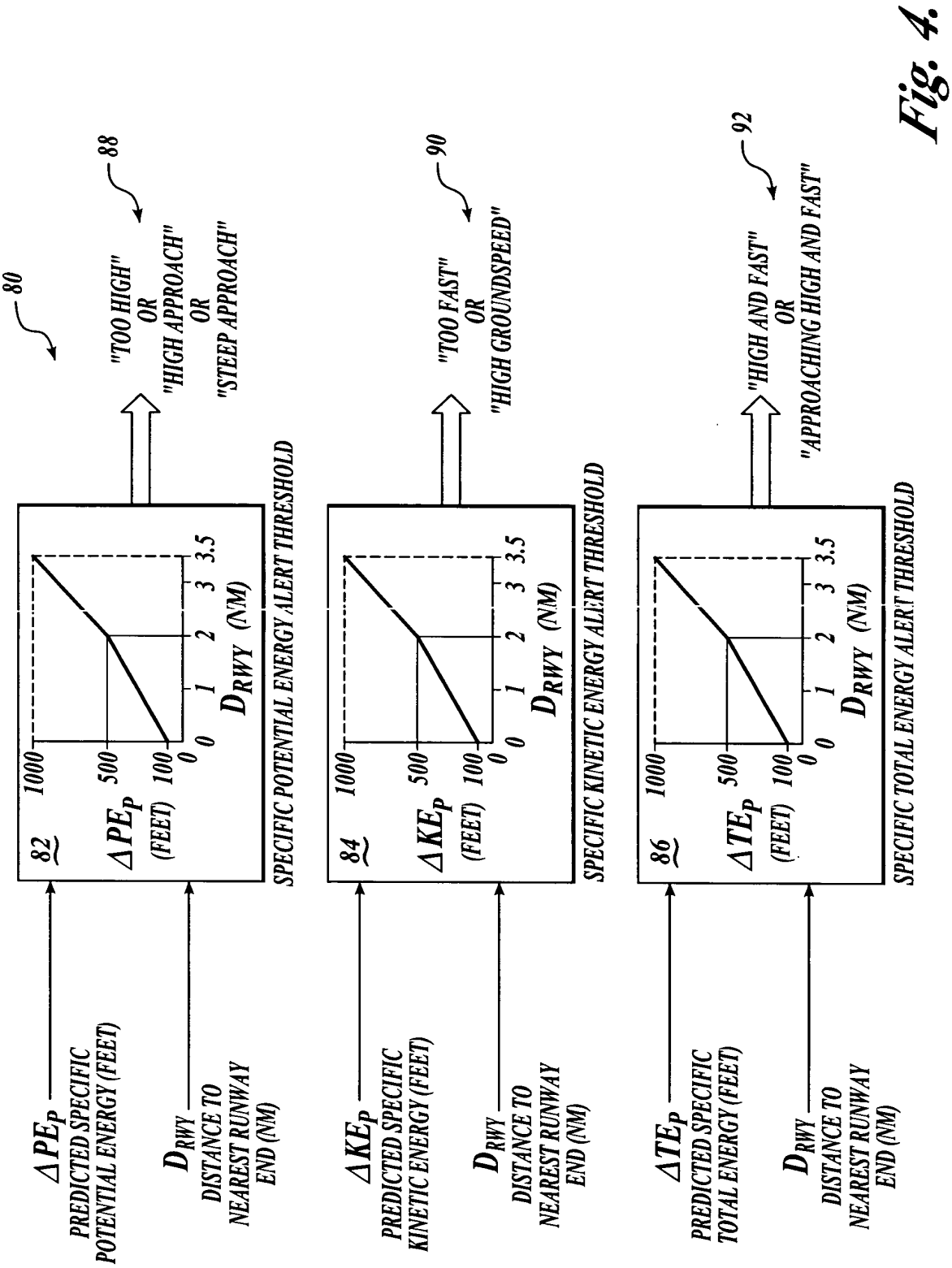
80
88
"TOO HIGH" OR "HIGH APPROACH" OR "STEEP APPROACH"
82
1000
500
100
0
ΔPE_P (FEET)
0 1 2 3 3.5
D_{RWY} (NM)
SPECIFIC POTENTIAL ENERGY ALERT THRESHOLD
ΔPE_P PREDICTED SPECIFIC POTENTIAL ENERGY (FEET)
D_{RWY} DISTANCE TO NEAREST RUNWAY END (NM)
90
"TOO FAST" OR "HIGH GROUNDSPEED"
84
SPECIFIC KINETIC ENERGY ALERT THRESHOLD
ΔKE_P PREDICTED SPECIFIC KINETIC ENERGY (FEET)
92
"HIGH AND FAST" OR "APPROACHING HIGH AND FAST"
86
SPECIFIC TOTAL ENERGY ALERT THRESHOLD
ΔTE_P PREDICTED SPECIFIC TOTAL ENERGY (FEET)

Fig. 4.

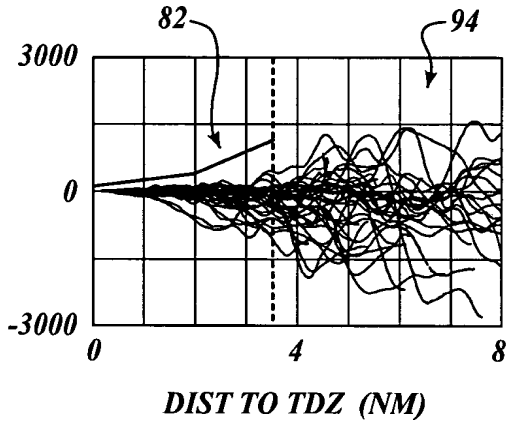

Fig. 5.

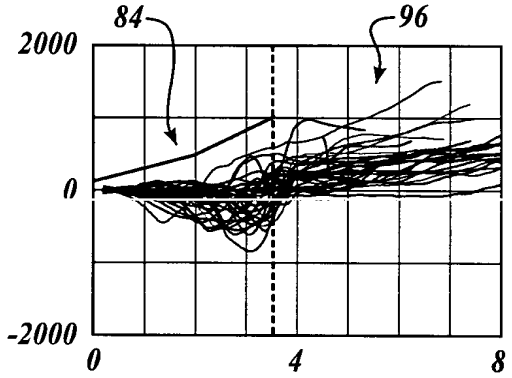

Fig. 6.

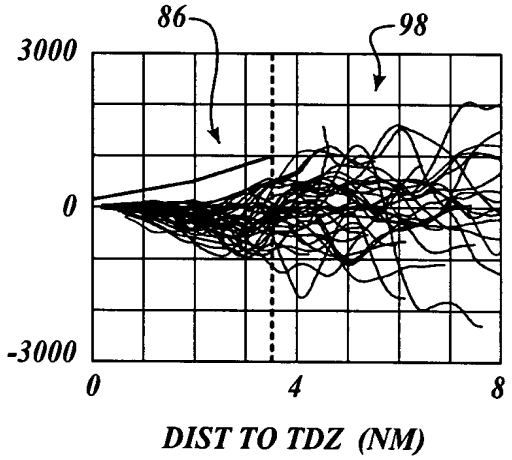

Fig. 7.